

NASA TECH BRIEF

Ames Research Center



NASA Tech Briefs announce new technology derived from the U.S. space program. They are issued to encourage commercial application. Tech Briefs are available on a subscription basis from the National Technical Information Service, Springfield, Virginia 22151. Requests for individual copies or questions relating to the Tech Brief program may be directed to the Technology Utilization Office, NASA, Code KT, Washington, D.C. 20546.

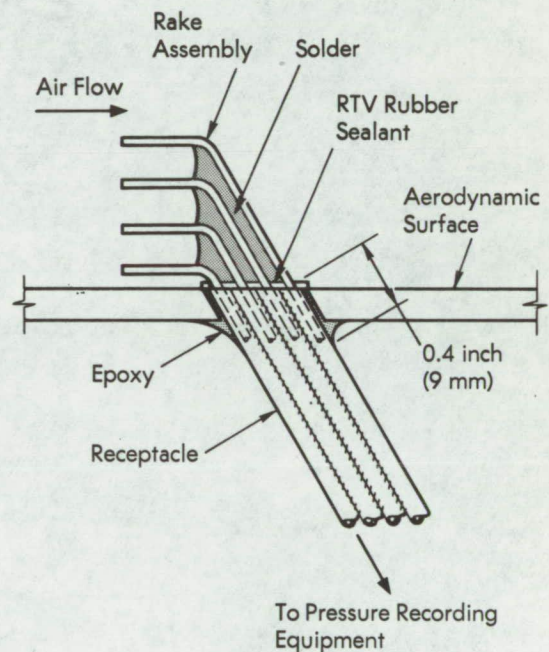
Pressure-Probe Assembly for Wind Tunnels

Pressure-probe assemblies (rakes) are used for measurement of boundary-layer pressure at the aerodynamic surfaces of wind-tunnel models. Prior designs of these assemblies utilize large mounting bases in order to provide room for attachment of the pressure lines. The bulky assemblies disrupt the air flow close to the aerodynamic surface; moreover, when boundary layer measurements are made in the area of surface bleed, a large base blocks some bleed holes and thus produces inconsistencies in the surface-bleed pattern and area.

The rake mounting design shown in the figure does not require a mounting base and, because of simplicity, rakes can be manufactured at lower cost. Furthermore, aerodynamic-surface discontinuities are reduced to a minimum when this type of rake is installed in a boundary layer bleed area because holes in a bleed pattern are not obstructed. The receptacle is fabricated from tubing with an internal diameter that accommodates the external diameter of the rake tubing (about 0.13-mm [0.005-inch] clearance). The receptacle tubes are silver soldered together; the ends of the rake tubing in the receptacle are straight for at least 9 mm (0.4 inch) and the receptacle tubes are spaced on the same centers as the tubes in the rake assembly. The receptacle is fastened by solder or epoxy resin on the wind-tunnel model with its tubing terminations set flush on the aerodynamic surface.

The rake assembly may be removed by cutting the sealant at the surface. When a rake becomes plugged

or is damaged, the assembly is easily removed for cleaning; however, since a new rake can be manufactured cheaply, it is preferable to discard damaged assemblies.



Note:

Requests for additional information may be directed to:

Technology Utilization Officer
Ames Research Center
Moffett Field, California 94035
Reference: TSP 72-10248

(continued overleaf)

Patent status:

No patent action is contemplated by NASA.

Source: Robert L. Warfield of
The Boeing Company
under contract to
Ames Research Center
(ARC-10569)